In one hand the index longer. In the other shorter or = "ring" finger.		Index of same length as "ring" finger in both hands.	
Men	57	Men	10
Women	45	Women	6
Total	102	Total	16
Men	:: 14·14 : 100	Men	:: 2·48 : 100
Women	:: 14·56 : 100	Women	:: 1·94 : 100
Total	:: 14·32 : 100	Total	:: 2·25 : 100

The following instances of this "carattere oscillante" (*schwankender character*, Ecker) of the human hand are taken from what the professor terms "our feminine Olympus":—

1. A pretty Piedmontese girl, with the most lovely hands. In both the index longest.
2. A Jewess of Modena, very lovely, and with beautiful hands. Index much shorter than "ring" finger on both sides.
3. A handsome lady of Imola, with pretty hands. The index a little shorter than the "ring" finger.
4. A Tuscan lady with a most lovely hand. Index the longest of the two digits in question.
5. A lady of Rimini, with a lovely and very small hand. Index longer on both right and left sides.
6. A Neapolitan lady with a wonderful face and figure, and with handsome but large hands. Index shorter than the "ring" finger on both sides.
7. A Ferrarese lady, pretty, and with a hand of rare beauty. Index the shortest in each hand.
8. The prettiest lady in Meldola, with lovely hands. Index the longer on both sides.
9. A lady with the most lovely face and figure and with beautiful hands. Index the shortest in both hands.
10. A Jewess of Livorna, handsome, and with the most lovely hands. The right index the longer, the left the shorter.
11. A lady of Cremona, with a wonderful face and figure, and with large but beautiful hands. Index longest on both sides.
12. A Venetian lady, very beautiful, and with "divine" hands. Index slightly longer on both sides.

Prof. Mantegazza considers that his observations partly confirm and in part check the conclusions of his German colleague. To the examples taken by Prof. Ecker from the domain of art, the former adds the following interesting passage from Prof. Casanova ("Mémoires de Casanova," tome vi., p. 252; Bruxelles, 1871), relative to an argument between this author and the celebrated painter Rafaele Mengs, on the subject of the two digits in question:—

"I remember that one day I took the liberty, in the course of viewing his pictures, of calling his attention to the fact that the hand of a certain figure seemed out of drawing. In fact the fourth finger was shorter than the second.

"'A pretty observation,' he replied; 'look at my hand,' and he held it out.

"'See mine,' I answered, 'I am convinced it does not differ from that of other sons of Adam.

"'From whom, then, would you have me descend?' he replied.

"'Ma foi!' I said, after examining his right hand, 'I do not know to what species to refer you, but you certainly don't belong to mine.'

"'Then your species is not a human one, for the form of the hand of man and woman is just like that.'

"'I bet you a hundred pistoles that you are mistaken,' said I.

"Furious at my contradiction, he throws aside palette and brush, rings for his servants, and makes them all show their hands. His rage was great when he discovered that in all of them the ring finger was longer than the index. Feeling however, the absurdity of his conduct, he ended the scene by the following *mot*:—

"'I am delighted, at any rate to be, to a certain point, unique of my kind.'"

Sig. Paolo Lioy—evidently a trustworthy observer—having been asked by Prof. Mantegazza to direct his attention to the subject in question, returned the following answer:—"I have examined about two hundred individuals but it is remarkable that only in *one man* and in the *left hand* have I seen the index longer than the ring finger. In all the rest, and in both sexes, the ring finger is always the longest, and, with the exception of nine persons, in whom it is but a little longer, it is generally much so; in this, too, in hands fairly beautiful—'in manine assai belle.' It is, therefore, remarkable that, as far as I have been able to see, painters and sculptors give the index the greater length. This I have noticed in all the designs of Canova, the most painstaking and purest idealiser of beauty; as I have been able to verify in certain figures of Titian and Ary Scheffer." Sig. Lioy, thus confirms, as Prof. Mantegazza remarks, the observations of Dr. Ecker.

With regard to the transmission from parent to offspring of the peculiarity of the hand which forms the subject of this article, Prof. Mantegazza states that in many cases he has been enabled to verify the heredity of these characters in certain families in which the father and mother differed as to the relative lengths of the two fingers in question; the children exhibiting the digital proportions of that parent to which they bore the greatest resemblance.

This interesting paper concludes with the following remarks:—"If, however, I have been mistaken in the interpretation of the asthetic value of the Eckerian character ('del carattere eckeriano'), it would be difficult to find a judge more impartial than myself, in that nature has given me a left hand with an index almost as long as the ring finger, and a right hand with the index shorter than the ring digit. But if artists wish to deduce a practical lesson from this very brief dissertation, I would advise them to give to the more perfect creations of their tool or pencil an index somewhat longer than the ring finger, without, however, wishing to deny to human nature the liberty of making very beautiful hands with a 'ring' finger longer than the index."

J. C. GALTON

NOTES

FILIPPO PARLATORE, Director of the Museo di Fisica è Storia Naturali, at Florence, and of the Botanic Gardens, died suddenly, of a fit, on Sunday, September 9. He elaborated the Gnetaceæ and Coniferæ, for the sixteenth volume of De Candolle's "Prodromus," and was author of a partly completed work on the Italian flora.

WE regret to announce the death of Prof. Jacob Nöggerath, lecturer on Mineralogy at Bonn University, who died at the advanced age of 90 years, on Thursday last the 13th instant.

SIR JOSEPH HOOKER and Prof. Asa Gray, who, as our readers know, are accompanying Dr. Hayden on a scientific tour in Western America, had, the *American Naturalist* states, collected, previous to August 1, nearly 400 species of rare plants, being thus enabled to study critically in their native habitats the species they had during past years described from dried specimens brought in by expeditions. Both Sir J. Hooker and Prof. Gray will prepare reports on the botany of the West for the Eleventh Report of Hayden's Survey.

MR. R. S. NEWALL, F.R.S., telegraphing to the *Times*, from the Observatory, Gateshead, last Thursday night, states that on August 23, during the total eclipse of the moon, he observed that Mars is surrounded by a whitish envelope, the diameter being about twenty times that of the planet. He saw it again on September 7, and again last night distinctly. It has a well-defined edge, and is densest nearest to Mars. Small stars were seen though it. It is easily visible, Mr. Newall states, in the 61½-inch finder.

THE regular proceedings of the Iron and Steel Institute commenced at Newcastle on Tuesday. According to the report of the secretary the effective strength of the Institute is now close on 1,000 members. After a discussion on two papers read at the last London meeting Mr. Lowthian Bell, M.P., read a paper on the separation of carbon, silicon, sulphur, or phosphorus in the refining and puddling furnace and in the Bessemer conversion. The afternoon was devoted to visits and excursions, as we announced last week.

HERR BRUIJN's last expedition to New Guinea, which started from Ternate in January last, returned to that island on June 15, having accomplished good results. Examples of both sexes of the wonderful new monotreme, *Tachyglossus bruijnii*, were obtained in the mountains on the north coast of New Guinea at an elevation of about 3,500 feet. The expedition was commanded by M. Leon Laglaize, a young French naturalist, who, with the rich collections he has made, is expected to return to Paris by the next French mail.

MR. A. BOUCARD, the well-known naturalist and collector, has just returned from a successful expedition to Costa Rica, where he passed some four months at the commencement of the year. Mr. Boucard has formed a good series of Costa Rican birds, comprising examples of about 200 species. Amongst these are several new to science. Mr. Boucard has also obtained the female of the rare and little known Cotingine bird described a short time ago by Mr. Salvin as *Carpodectes nitidus*.

LETTERS have been received from Mr. Everard F. im Thurm, announcing his safe arrival at Georgetown, British Guiana, where he has accepted an appointment as Curator of the British Guiana Museum. Mr. im Thurm will shortly proceed upon an expedition into the interior of the Colony to obtain specimens for the collection under his charge.

WE have received the Daily Programme of the meeting of the American Association at Nashville. Judging from the number of members registered and elected the attendance must have been large, considering the almost tropical heat that prevailed. Eighty-seven papers were entered for reading, all of them on points of scientific importance Prof. Newcomb gave an evening lecture on the two important astronomical discoveries recently made in America, viz., that of oxygen in the sun by Prof. Draper, and that of the satellites of Mars by Prof. Hall. Prof. Pickering, vice-president and president of Section A, was unable to be present, but an address by him was read, in favour of the endowment of research. He described what he thought would be a suitable building and arrangements for a physical laboratory. Prof. Pickering gave elaborate details of his project, and pointed out the numerous advantages that might be expected to result when those facilities were afforded to investigators. The plan includes the appointment of a presiding officer and a staff of assistants. From the reports in the local paper, the *Daily American*, the meeting as a whole seems to have been well managed and successful. Without doubt the prominent feature of the meeting was Prof. Marsh's address on the Succession of Vertebrate Life in America, which we are happy to be able to print elsewhere.

THE days of meeting of the third annual conference of the Cryptogamic Society of Scotland, at Dunkeld, have been changed to October 17, 18, and 19.

IN the *Scientific and Literary Review* for September, 1877, there is a notice of the Spined Soldier-bug as a *newly-discovered* enemy to the Colorado beetle. In the "Fourth Annual Report of the Noxious, Beneficial, and other Insects of the State of Missouri (1872)," Mr. Riley speaks of this insect as "now so well known for its efficiency in thinning out the ranks of our potato pest." Mr. Riley also figures two other Hemiptera of the family *Scutelleridæ* as enemies to this beetle—the Ring-banded Soldier-bug and the Dotted-legged Plant-bug (*Euschistus punctipes*).

NEWS from Naples has been received announcing an increased activity of Mount Vesuvius. The glow of fire in the crater is so intense that it can be distinctly seen from Naples at night.

IN our number for August 9 we briefly noticed the ascent made by Mons. Wiener of the mountain Illimani, one of the highest—if not the highest—of the Bolivian Andes, which forms a noble object from the city of La Paz, and was formerly reputed (on the authority of Mr. Pentland) to have an altitude of no lesss than 24,200 feet. M. Wiener, however, makes its height only 20,112 feet, while Mr. Minchin, as we have already observed, places its altitude at 21,224 feet. If the latter estimate be correct, Mons. Wiener has, we believe, not only made the highest ascent which has been made in the Andes, but has attained a greater altitude than has hitherto been reached *on* the earth out of Asia, and in Asia has only been beaten by Mr. Johnson, who some years ago got to a height of 22,300 feet in Cashmere. As the recorded ascents to the height of 21,000 feet are extremely few, we shall be glad to hear further particulars respecting Mons. Wiener's exploit, and more especially whether he experienced much exhaustion through the rarefaction of the air. Practised mountaineers who have climbed to a height of 17,000 to 18,000 feet have been of opinion that even at such altitudes there is a very important and perceptible diminution of the bodily powers, and think it probable that the height of 25,000 or 26,000 feet will be found to be about the limit which will ever be reached on foot. As a set-off to this opinion we may mention the facts that hunters in the Himalayas frequently pursue their game at heights exceeding 20,000 feet without experiencing any notable inconvenience from the low barometric pressure, and that natives living on the base of Demavend, near Teheran, often ascend to its summit to gather sulphur from its crater without any great difficulty. The height of this mountain, there is reason to believe, also exceeds 20,000 feet, although it has never been accurately determined. If, therefore, severe work can be done with impunity at such elevations, it seems not unreasonable to suppose that much greater heights might be attained by men who had previously accustomed themselves to life at high altitudes. Aëronauts, anyhow, have proved that life can exist at 30,000 feet above the level of the sea, and that at 25,000 feet, and upwards, one may positively be comfortable if sufficiently warmly clad. That such is the case is sufficiently remarkable, for "travellers in the air" have to sustain incomparably more rapid variations of pressure and temperature than mountain-climbers. Mr. Glaisher, on his memorable ascent on September 5, 1862, left the earth at 1 P.M., and in *less than an hour* shot up to a height of 30,000 feet. At starting the temperature of the air was 59°, and at its greatest altitude it was sixty-one degrees lower! Mountaineers experience no such extreme variations as these. They rarely ascend more rapidly than 1,000 feet per hour, never so much as 15,000 feet in a *day*, and become to some extent acclimatised as they progress upwards. On the whole we are inclined to think that man will not rest until he has at least attempted to reach the loftiest summits on the earth, though we will venture to assert that it will be long before anyone crushes down the snow on the summit of Mount Everest.

SINCE we last noticed the progress of the great Government Map of Switzerland several further instalments of it have been issued. In all 108 sheets have been published out of the 540 which will compose the map. Amongst the more recently-published sheets the following will especially be found useful by English travellers in Switzerland:—La Chaux de Fonds, Thun, Engelberg, Wassen (embracing the Titlis district), Guttanen (with the basin of the Gauli glacier), and St. Mauritz (giving the country round Pontresina). The whole of the sheets as yet published are most admirably drawn, and reflect the highest credit on those who have been concerned in their production; and the celerity with which they are issued makes us desire that a little more life could be infused into our own topographical departments.

PETERMANN'S *Mittheilungen* for October will contain a long paper, embodying the results of considerable research, on the German and Latin Elements among the Population of the South Tyrol and Venetia. A new map of a large portion of Costa Rica will show the results of the surveys of Gabb, Collins, and Martinez. A letter from Dr. Schweinfurth describes his journey through the Arabian Desert of Egypt, from Heluan to Keneh, between March 28 and May 18 of this year. He has obtained, besides important topographical data, much valuable information as to the geological and botanical conditions of the region.

THERE is on view at present at the Alexandra Palace an interesting collection of fourteen Nubians with a number of animals, comprising six ostriches, six giraffes, five elephants, twenty-one racing dromedaries, three rhinoceroses, two hunting dogs, two Abyssinian spotted donkeys, four buffaloes, two zebus, monkeys, &c. Some specimens of *Cynocephalus gelada*, which are said to live from 7,000 feet to 11,000 feet high in the Abyssinian hills are expected to follow. The European who organised and accompanied the caravan for Messrs. Rice and Hagenbeck, says that the men from the different tribes speak different patois, so that he very often cannot understand them, and they cannot understand one another. The different districts in which the various animals were captured does not, therefore, seem to be known to the present owners. As to the men, they have been interrogated as to their ages and the tribes to which they belong. There are four Hadendoes aged fifteen, twenty-three, twenty-three, and twenty-five. The characteristic manner of dressing the hair is well seen in the three men, but the lad does not seem to have adopted yet the artificial arrangement. They are all tall, fine men. There are two Hallengas from Cassala, aged twenty-two and twenty-four. The general style of trimming the hair is much the same as of the Hadendoes, but the "fringe" is much longer and stands away from the head more. There are three of the Beni-Amer tribe, one of whom, aged twenty-four, having fallen ill in Paris, had his hair cut off; the "old man," aged thirty-two, wears a close white cap, and he alone of the party can read and write; while the third retains his hair in its original state. Of the remaining six men of the fourteen each represents a different tribe, and they all differ in appearance and style of hair arrangement from those tribes already mentioned. There is a Djaalein, aged twenty-six; a Homran, aged nineteen, who has the three rhinoceroses under his special care, and which follow him and lick his hand like pet lambs; a man, aged twenty-seven, from Amara, near Suakim; and a Takrouri, twenty-five, who has twice been to Mecca, the only one of the party who has; and the Bara "boy," who claims to be twenty-one. He has the negro hair and lips, and a very contented look. All the men seem happy, and sing, laugh, smoke, and go through the mimic war, dromedary racing, and their representation of crossing the desert with great delight.

IN a letter to yesterday's *Times* Mr. Henry Jeula, of Lloyd's, gives some interesting data to show that there is probably some connection between sunspots and the number of wrecks posted each year on Lloyd's Loss Book. His data are for two complete cycles of eleven years, 1855–1876, and the results Mr. Jeula has worked out along with Dr. Hunter. Dividing the eleven years as nearly as the number will allow, into three parts, and taking the percentages of losses posted, Mr. Jeula finds a coincident minimum period of four years at the extremities of the cycle, a maximum period of three years in the centre of the cycle, and an intermediate period of the four years lying between the maximum and minimum periods. Mr. Jeula expresses the hope that the great practical importance of the theory of the connection between sunspots and weather will lead to a full and exhaustive examination of all the evidence bearing upon it.

THE exhibition of the Photographic Society of Great Britain will be opened by a *conversazione* on Tuesday evening, October 9, at 5, Pall Mall, East

IN a paper presented recently to the philosophical faculty at Heidelberg University, Herr Richard Boernstein has published his investigations on the influence of light upon the electric resistance of metals. Mr. Willoughby Smith had found that the electric resistance of selenium, and in a much smaller degree that of tellurium also, decreases under the influence of light. Herr Boernstein has now made the interesting discovery that this property also belongs to platinum, gold, and silver, most probably to all metals, in fact. The electric current, according to Herr Boernstein, diminishes the electric conducting power, as well as the sensitiveness towards light, of its conductor, but after cessation of the current, both gradually return to their former values.

ROCK crystal seems to be growing more and more in favour amongst technical men on account of the stability of its physical properties. At the August meeting of the Bonn Society of Naturalists it was reported that the directors of the Imperial Mint of Germany have recently ordered of Herr Stern, at Oberstein, several absolutely correct normal weights made of rock crystal, which are to be used for the control of gold coins. These weights have the great advantage that it is unnecessary to determine the specific gravity of every weight, and in the case of measures to find the thermal co-efficient of expansion of every measure, as both are as near constant as possible. They have been found the same in all the specimens of rock crystal yet examined, viz., specific gravity at 0° C. = 2,6506 (reduced to water at 4° C.); coefficient of expansion for 1° C., parallel to the axis, 0·00000750 inch, *i.e.*, seventy-five ten-millionths of an inch.

AT the same meeting Prof. vom Rath read a report from Dr. Th. Wolf, the state geologist to the South American republic of Ecuador, on the province of Esmeraldas (the northernmost province of the republic), and on the rain of ashes which, coming from the north-east, *i.e.*, from the volcanic interior, fell along the whole *littorale* of Guayaquil between June 26 and June 30. Dr. Wolf, after giving a general geological description of Esmeraldas (in the auriferous sands of which he discovered platinum), adds the following general remarks:—Of all provinces of Ecuador Esmeraldas is the most uniform in its relief and geological structure. It reaches from the coast of the Pacific to the foot of the Andes. A great part of the province is quite flat, particularly in the north; another part is traversed by low mountains, the highest points of which scarcely reach 500 or 600 meters; the average height of the hills, however, is only 50–70 meters. The province is a magnificent country, and especially rich in the finest timber and many other vegetable products — none utilised. The only article which finds its way abroad is caoutchouc, and enormous quantities of this have been exported during the last ten years, but the export begins gradually to decrease, since the workmen, instead of only tapping the trees, destroy them completely. The province is inhabited by a population of only 10,000 natives, who live along the coast. The whole of the interior is covered by one gigantic virgin forest, and accessible only in canoes upon the rivers. Of the three months of my journey I spent more than two in canoes, which are rather small and hardly comfortable, or adapted for a travelling naturalist; the last twenty-three days I spent uninterruptedly in a canoe on the Esmeraldas River and its tributaries. The rivers are very rapid and not without dangers; but then my journey was made during the middle of the rainy season, when the rivers are very much swollen. On the Cayapas River I made the acquaintance of the wild Cayapas Indians, a very interesting tribe with a language and customs of their own. They keep in perfect isolation from other tribes, living in forests, hunting and fishing, going almost naked, and painting their bodies; on the whole they are very harmless, and may be some 2,000 in number."

IN the *Nachrichten von der Gesellschaft der Wissenschaften zu Göttingen*, Herr Edmund Hoppe gives an account of some experiments he made with a view to determine the resistance offered by flames to the galvanic current. He arrived at the following results: (1) In each flame the greater galvanic conducting power depends on the greater heat and the greater quantity of burning gas. (2) With different flames the conducting power depends on the burning substances; the salts of potassium, sodium, barium, strontium, lithium, thallium, and copper in particular increase greatly the conducting power of the hydrogen flame. (3) Ohm's law applies perfectly to flames.

THE additions to the Zoological Society's Gardens during the past week include a Macaque Monkey (*Macacus cynomolgus*) from India, presented by Mr. A. S. Percival; an Osprey (*Pandion haliaëtus*) from Yorkshire, presented by Mr. W. H. S. Quintin; a Common Hangnest (*Icterus vulgaris*) from South America, presented by Mr. Hamilton Dunlop; a West African Python (*Python sebæ*) from West Africa, presented by Mr. Francis Lovell; two Guilding's Amazons (*Chrysotis guildingi*) from St. Vincent, a Violet Tanager (*Euphonia violacea*), a Yellow-winged Blue Creeper (*Cœreba cyanea*), a Common Boa (*Boa constrictor*) from South America, deposited; three Capybaras (*Hydrochœrus capybara*) from South America, purchased.

INTRODUCTION AND SUCCESSION OF VERTEBRATE LIFE IN AMERICA[1]

THE origin of life, and the order of succession in which its various forms have appeared upon the earth, offer to science its most inviting and most difficult field of research. Although the primal origin of life is unknown, and may perhaps never be known, yet no one has a right to say how much of the mystery now surrounding it science cannot remove. It is certainly within the domain of science to determine when the earth was first fitted to receive life, and in what form the earliest life began. To trace that life in its manifold changes through past ages to the present is a more difficult task, but one from which modern science does not shrink. In this wide field every earnest effort will meet some degree of success; every year will add new and important facts; and every generation will bring to light some law, in accordance with which ancient life has been changed into life as we see it around us to-day. That such a development has taken place no one will doubt who has carefully traced any single group of animals through its past history, as recorded in the crust of the earth. The evidence will be especially conclusive if the group selected belongs to the higher forms of life, which are sensitive to every change in their surroundings. But I am sure I need offer here no argument for evolution; since to doubt evolution to-day is to doubt science, and science is only another name for truth.

Taking, then, evolution as a key to the mysteries of past life on the earth, I invite your attention to the subject I have chosen: The Introduction and Succession of Vertebrate Life in America.

In the brief hour allotted to me I could hardly hope to give more than a very incomplete sketch of what is now known on this subject. I shall therefore pass rapidly over the lower groups, and speak more particularly of the higher vertebrates, which have an especial interest to us all, in so far as they approach man in structure, and thus indicate his probable origin. These higher vertebrates, moreover, are most important witnesses of the past, since their superior organisation made them ready victims to slight climatic changes, which would otherwise have remained unrecorded.

In considering the ancient life of America it is important to bear in mind that I can only offer you a brief record of a few of the countless forms that once occupied this continent. The review I can bring before you will not be like that of a great army, when regiment after regiment with full ranks moves by in orderly succession, until the entire host has passed. My review must be more like the roll-call after a battle, when only a few scarred and crippled veterans remain to answer to their names. Or rather, it must resemble an array of relics, dug from the field of some old Trojan combat, long after the contest, when no survivor remains to tell the tale of the strife. From such an ancient battle-field a Schliemann might unearth together the bronze shield, lance-head, and gilded helmet of a prehistoric leader, and learn from them with certainty his race and rank. Perhaps the skull might still retain the barbaric stone weapon by which his northern foe had slain him. Near by the explorer might bring to light the commingled coat of mail and trappings of a horse and rider, so strangely different from the equipment of the chief, as to suggest a foreign ally. From these, and from the more common implements of war that fill the soil, the antiquary could determine, by patient study, what nations fought, and perhaps when and why.

By this same method of research the more ancient strata of the earth have been explored, and in our western wilds, veritable battle-fields, strewn with the fossil skeletons of the slain, and guarded faithfully by savage superstition, have been despoiled, yielding to science treasures more rare than bronze or gold. Without such spoils, from many fields, I could not have chosen the present theme for my address to-night.

According to present knowledge, no vertebrate life is known to have existed on this continent in the Archæan, Cambrian, or Silurian periods; yet during this time more than half of the thickness of American stratified rocks was deposited. It by no means follows that vertebrate animals of some kind did not exist here in those remote ages. Fishes are known from the upper Silurian of Europe, and there is every probability that they will yet be discovered in our strata of the same age, if not at a still lower horizon.

In the shore deposits of the early Devonian sea, known as the Schoharie grit, characteristic remains of fishes were preserved, and in the deeper sea that followed, in which the corniferous limestone was laid down, this class was well represented. During the remainder of the Devonian fishes continue abundant in the shallower seas, and, so far as now known, were the only type of vertebrate life. These fishes were mainly ganoids, a group represented in our present waters by the gar-pike (*Lepidosteus*) and sturgeon (*Acipenser*), but, in the Devonian sea, chiefly by the placoderms, the exact affinities of which are somewhat in doubt. With these were elasmobranchs, or the shark tribe, and among them a few chimæroids, a peculiar type, of which one or two members still survive. The placoderms were the monarchs of the ocean. All were well protected by a massive coat of armour, and some of them attained huge dimensions. The American Devonian fishes now known are not as numerous as those of Europe, but they were larger in size, and mostly inhabitants of the open sea. Some twenty genera and forty species have been described.

The more important genera of placoderms are *Dinichthys*, *Aspidichthys*, and *Diplognathus*, our largest palæozoic fishes. Others are, *Acanthaspis*, *Acantholepis*, *Coccosteus*, *Macropetalichthys*, and *Onychodus*. Among the elasmobranchs were, *Cladodus*, *Ctenacanthus*, *Machæracanthus*, *Rhynchodus*, and *Ptyctodus*, the last two being regarded as chimeroids. In the

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[1] Lecture delivered at the Nashville meeting of the American Association, August 30.